REMARKS

Claims 31-41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Arlid *et al.* U.S. Patent No. 3,898,929 ("Arlid") in view of Meltz U.S. Patent No. 3,345,942 ("Meltz"). The rejection is based on the following arguments which are respectfully traversed:

I. Statement on Page 2 of the Office Action:

> "Arlid et al. teach a method of using a roller (fig. 2) comprising a roller core 11 and a roller covering 12 being composed of an elastomer or elastic plastic material (col. 3, lines 13-18) <u>comprising the step of running the roller (fig. 2) in a dampening system</u> (fig. 3, col. 4, lines 3-10) of an offset printing machine (col. 1, lines 25-30)." (emphasis added).

This statement is wrong for the following reasons:

Figure 2 in Arlid is a cross sectional view taken along the line 2-2 of Figure 1 (column 3, lines 5-6) showing the hickey picker cylinder 10 which is provided with a steel core 11 and a rubbery coating 12 (column 3, lines 11-13). Accordingly, the roller (figure 2) is the hickey picking roller designated with the numeral 10.

Figure 3 is a schematic view of the ink train of a conventional offset printing press (column 3, lines 7-8). Figure 3 shows the inking system with the rollers designated with the numerals 23 through 32 (column 3, line 44 – column 4, line 3) and the roller 18 which is in contact with the hickey picking roller 10 (column 3, lines 51-52). Figure 3 also shows the dampening system with the rollers 34 through 39 (column 4, lines 3-10). **Thus, since the hickey picking roller 10 is in contact with roller 18 which, according to Figure 3 and to the Description, is clearly located in the inking system of the described press, Arlid do not teach "running the roller (figure 2) in a dampening system".**

II. Statement on Page 2 of the Office Action:

> "Arlid et al. teach the invention cited with the exception of the elastomer or elastic plastic material containing fluorinated polyolefin."

This statement is wrong for the reasons explained above. Again, there is no teaching of the applicants' claimed method, let alone the applicants' claimed cover for a dampening roller provided by Arlid.

III. Statement on Page 2 of the Office Action:

> "Meltz teaches a roller with a roller covering 14 composed of an elastomer or elastic plastic material containing fluorinated polyolefin [PTFE)](col. 3, lines 48-61)".

Although this statement is correct, the roller with the rubber covering 14 embodying Meltz' invention is the roller designated with the numeral 10 in Figure 1 (column 3, lines 20-27), which will be the last form roller 48 to apply ink to the blanket or plate (column 3, lines 41-44). **Thus, Meltz like Arlid, does not disclose running the specific roller in a dampening system.** Note, that Figure 3 solely shows an inking system.

IV. Statement on Page 3 of the Office Action:

> "Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided the invention of Arlid et al. with the elastomer or elastic plastic material containing fluorinated polyolefin, in the light of the teachings of Meltz, in order to provide a surface that can be easily ground if damaged, will provide a smooth surface with the desired release properties, and to provide a roller that is easier to clean as suggested by Meltz at col. 5, lines 2-8 and lines 21-25.

According to the aforesaid, providing the invention of Arlid with the rubber covering of Meltz having polytetrafluoroethylene particles dispersed therein, one would arrive at a hickey picking roller <u>running in the inking system</u> of an offset printing press. **Again, both Arlid and Meltz do not disclose the claimed method of running a roller comprising a roller core and a roller covering being composed of an elastomer material or an elastic plastic material containing fluorinated polyolefin <u>in a dampening system</u> of an offset printing machine.**

Examiner's Response to Arguments

V. Statement on Page 4 of the Office Action:

> "Applicants' arguments filed 5/30/03 have been fully considered but they are not persuasive"

This statement is respectfully traversed because the applicants believe that their previous arguments were persuasive. The applicants believe that the applicants' arguments regarding the surprising advantage of running a roller comprising a roller core and a roller covering being composed of an elastomer material containing fluorinated polyolefin or elastic plastic material containing fluorinated polyolefin in a dampening system of an offset printing machine as well as the unexpected results disclosed in the specification have not been considered.

VI. Statement on Page 4 of the Office Action:

> "it is noted that Meltz suggests using the roller for a dampening system. In col. 1, lines 46-51, Meltz teaches that the roller could be used wherever rubber covered rollers have been used in the past. The rolling of ink onto printing plates is clearly a dampening system (col. 1, line 50) also demonstrated by Arlid et al. (see plate cylinder 19 and coated rollers 37)."

This statement contains several inaccuracies:

When disclosing intended uses of the roller according to his invention Meltz explicitly says: 'and in the printing industry for the rolling of ink onto printing plates' (column 1, lines 49-50). **Thus, it is obvious that Meltz clearly excludes rollers in the dampening system of a printing press from his invention**. Furthermore, Meltz explicitly discloses the advantageous use of the roller as a form roller in an inking system for printing (column 1, lines 51-52) where the roller serves the dual function of being a form roller and a hicky roller (column 1, lines 54-56).

According to column 4, lines 3-10, the coated roller 37 in the dampening system of Arlid supplies the dampening solution to the hard surfaced rollers 38 and 39 which are in contact with the plate cylinder 19. Supplying dampening solution and supplying ink to the printing plate are two different functions of rollers located in the dampening system or in the inking system of an

offset printing press. **Thus, rolling of ink onto the printing plate is clearly not the primary function of a roller in a dampening system.** (Support for this can be found in John MacPhee, Fundamentals of Lithographic Printing, 1998, pages 4-7, see enclosed).

Conclusion drawn from the aforesaid

Concluding the aforesaid, the claimed invention, a method of using a roller comprising a roller core and a roller covering being composed of an elastomer material or elastic plastic material containing fluorinated polyolefin comprising the step of running the roller in a dampening system of an offset printing machine is neither disclosed or suggested by Arlid or Meltz. **All attempts of the Examiner constructing the claimed invention by selectively picking and combining related and non related details from the disclosure of the prior art and mixing such facts with pure assumptions can not establish a case of obviousness because the basic assumption that Arlid were disclosing an elastomer covered roller in a dampening system is not true.**

Even if Arlid were disclosing an elastomer covered roller running in the dampening system of an offset printing machine, the prior art does not provide any motivation that would cause one skilled in the art to modify such roller in the light of Meltz to specifically arrive at the applicants' claimed invention.

According to Meltz, the roller with the rubber covering having polytetrafluoroethylene particles uniformly dispersed therein is primarily used as a form roller in an inking system where it supplies ink to the printing cylinder and attracts dirt particles and paper fibers at its surface (column 5, lines 9-15). As is known in the art (see enclosed copies of John MacPhee, Fundamentals of Lithographic Printing, 1998, pages 4-7), the thickness of the ink film on the surface of an ink roller is just a few (3-6) microns. In addition, the ink rollers, particularly the form rollers which are directly contacting the plate, must deliver a consistent supply of ink to the plate. Therefore, the (form) roller covering of Meltz must have a good attraction to ink to build up a consistent thin ink film on its surface as it is required in the offset printing process.

As outlined in the specification (U.S. 2001/0051567 A1, page 1, paragraph [0004] (see enclosed copy)), it must be prevented that ink spills back from the printing plate into the dampening system, where it pollutes the fountain solution and deposits on the surface of the dampening rollers with the risk of potentially damaging the coverings. **Therefore, one skilled in the art would not be motivated to take the ink receptive ink form roller covering disclosed by Meltz for making an ink-repellent dampening roller covering.**

Further support for this argument is provided by U.S. Patent No. 3,926,116 (Wildeman) which is already on record. Wildeman discloses a separator roller 18 which removes ink from the form dampener roller and sends this ink back into the ink supply system. To accomplish this purpose, the separator roller 18 is covered with a <u>material 18a that has a high affinity for ink</u>. Particularly, the separator roller 18 has a <u>surface covering 18a made of polytetrafluoroethylene resin</u>, because Wildeman discovered that <u>in an environment where both lithographic printing ink and dampening liquid are present, the Teflon (= PTFE by DuPont) will not accept any dampening liquid on the surface, but instead will immediately become wetted with the ink</u> (column 5, lines 10-14 and 56-64).

One skilled in the art would learn from this teaching that subjected to an environment where both printing ink and dampening liquid are present, the polytetrafluoroethylene particles in the surface of the roller covering disclosed by Meltz would attract and accumulate ink on the roller surface. As outlined in the specification (page 1, 4th paragraph), however, it must be prevented that ink spills back from the printing plate into the dampening system and deposits on the surface of the dampening rollers. Thus, both Meltz and Wildeman teach away from the applicants' claimed invention. Accordingly, one skilled in the art would rather be deterred than motivated to run a roller such as disclosed by Meltz in the dampening system of an offset printing machine.

Therefore, it was a great surprise to the applicant when he discovered that when running a roller comprising a roller covering being composed of an elastomer or elastic plastic material containing fluorinated polyolefin in the dampening system of an offset printing machine the feed back of ink from the plate into the dampening system was diminished and the deposition of ink onto the surface of this roller was reduced.

"Ease of Cleaning"

To construct a case of obviousness the Examiner points out that Meltz claims ease of clean-up for the roller covering embodying his invention. However, when mentioning the cleaning of the roller, Meltz talks of the periodically removing of the dirt and other particles which could cause hickies or spots from the roller surface, as laid out at column 5, lines 18-25. **Thus, according to Meltz ease of cleaning means ease of removing dirt and paper particles from the surface of a hickey picking roller.**

The problem solved by the claimed invention is different. As cited above, in the course of time, ink that spills back into the dampening system deposits on the surface of the roller coverings. Accordingly, a cleaning of the dampening rollers is performed to remove the deposited ink from the roller coverings. As described in Example 1, due to the slower deposition of ink on the surface of the roller embodying the invention this roller had to be cleaned once in the same period of time when a comparative roller had to be cleaned three times. Cleaning a roller surface from ink is not the same as cleaning a roller surface from hickies. Furthermore, preventing a surface from getting contaminated quickly is different to cleaning a surface easily.

Summary

There is no disclosure in the prior art showing or suggesting running a roller with a roller covering being composed of an elastomer or elastic plastic material containing fluorinated polyolefin in the dampening system of an offset printing machine.

Further, there is no disclosure in the prior art showing or suggesting, that running a roller with a roller covering being composed of an elastomer or elastic plastic material containing fluorinated polyolefin in the dampening system of an offset printing machine would provide the following advantages:

- Preventing ink from spilling back from the printing plate into the dampening system (page 6, lines 20-30 of the specification).
- Causing ink depositing more slowly on the surface of a roller covering comprising the fluorinated polyolefin compared to a roller covering not comprising fluorinated polyolefin (Example 1).

- Markedly lengthen the cleaning intervals while retaining the high quality of the dampening process (page 3, lines 19-22 of the specification).
- Improving the wetting and enabling a drastic reduction of the isopropyl alcohol content in the fountain solution (page 7, lines 4-7 of the specification).

The prior art is teaching away from the applicants' invention claiming a method of using a roller comprising a roller core and a roller covering being composed of an elastomer material containing fluorinated polyolefin or elastic plastic material containing fluorinated polyolefin comprising the step of running the roller in a dampening system of an offset printing machine. For the above reasons, this rejection should be withdrawn.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 08463-00001-US from which the undersigned is authorized to draw.

Respectfully submitted,

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Enclosures: (1) John MacPhee, Fundamentals of Lithographic Printing, 1998, pages 4-7
(2) U.S. 2001/0051567

Fundamentals of Lithographic Printing is the most comprehensive book available on the science of lithography. Written by an engineer, it will appeal to engineers entering the industry, to workers in the field, and to students training for a career in printing. This first volume—*Mechanics of Printing*—emphasizes single-color sheetfed printing, covering in detail these topics: cylinders, blankets, plates, rollers, inking systems, and dampening systems. An entire section is devoted to the unique features of web printing, and another to non-traditional forms of lithography, including waterless printing.

John MacPhee, an engineer with a career in research and development that spans 45 years, has worked for Baldwin Technology for the past 25 years, where he was a co-inventor of the pad-type automatic blanket cleaner and the Delta dampener.

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ISBN 0-88362-214-9

9 780883 622148

Printed in U.S.A.

1440

Fundamentals of Lithographic Printing

MacPhee

GATF

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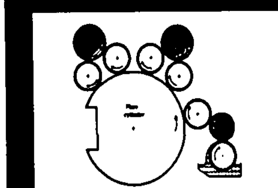
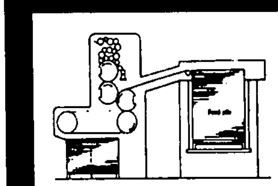
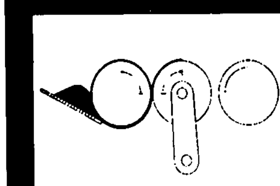
Volume I
Mechanics of Printing







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Library of Congress Catalog Card Number: 97-78414
International Standard Book Number: 0-88362-214-9

Printed in the United States of America

GATF Order No. 1440

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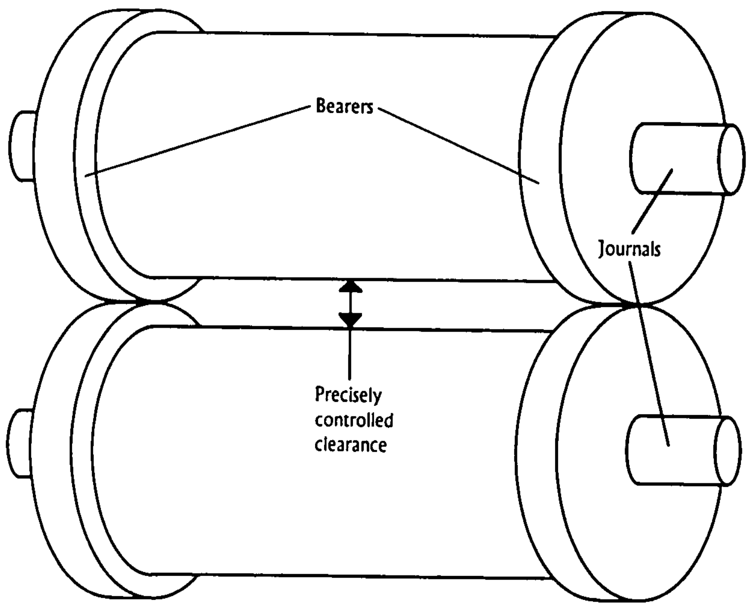

Figure 1.3 Typical plate and blanket cylinder arrangement. Running on bearers produces a precisely controlled clearance between cylinder bodies.

that covers the blanket cylinder must be replaced periodically because of wear or damage, clamps are also provided in the gap of the blanket cylinder to enable the blanket to be changed quickly as well.

The impression cylinder has two jobs: to transport the paper sheets to be printed to the blanket cylinder nip, and to support the high pressure needed to effect good transfer of the inked image from blanket cylinder to paper. To accomplish its first task, a set of grippers is located in the impression cylinder gap. As the gap rotates past the paper feed section of the press, the grippers are closed to clamp the leading edge of a paper sheet. Thus the paper sheet is carried around the impression cylinder circumference to the nip formed with the blanket cylinder. Some time after exiting this nip, the grippers are opened and the pull on the sheet is transferred to a set of grippers in the delivery section of the press, which transports it to the delivery pile.

1.1.2 Inking System. The task that the inking system is called upon to perform is by no means simple, in that it must deliver a consistent supply of ink to the image area of the plate at speeds of up to 15,000 plate cylinder revolutions per hour on a sheetfed press and 60,000 or more on a web press. The precision with which this must be accomplished is highlighted by the fact that the thickness of the ink film deposited on the

paper is about 1 micron (0.00004 inch) for coated paper as shown in Figure 1.4 (MacPhee, 1979). In newspaper printing, the film thickness may be as high as 1.5 microns.

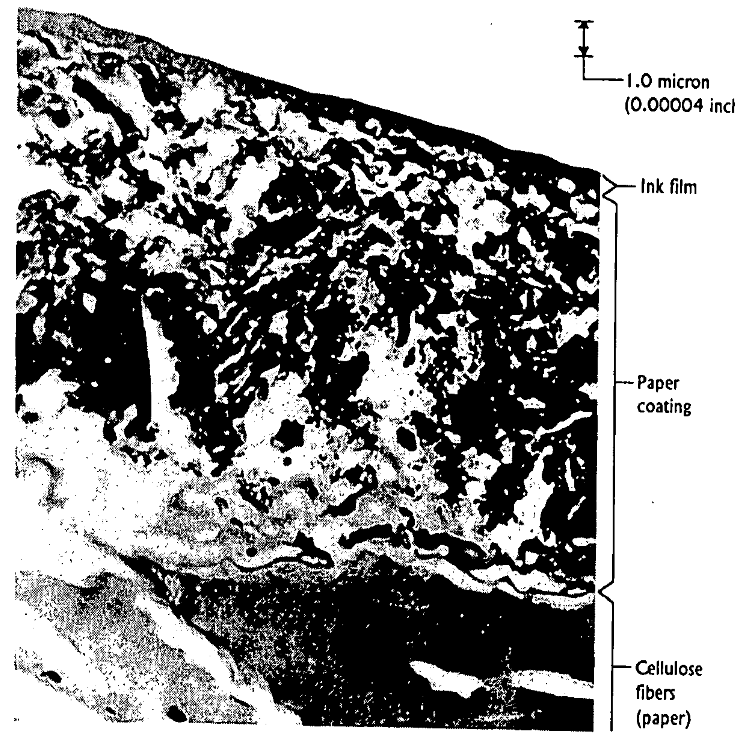

Figure 1.4 Electron microscope photograph of section through coated paper showing dry printed ink film. Maximum film thickness is slightly less than 1.0 micron.

Furthermore, variations in a one-micron film thickness of as little as 0.1 micron can produce a variation in print density of 0.08 density units. This latter variation is higher than can be detected by the eye of a skilled pressman and is also greater than what many print buyers consider acceptable. For the ensuing discussion in this chapter, the required film thickness on paper will be taken as one micron.

As shown in Figure 1.2, the press inking system consists of a train of rollers, alternately rubber-covered and hard-surfaced, that transport ink from a reservoir or fountain to the plate. Except for the ductor and fountain rollers (to be described later on), all of the rollers run at the same surface speed, within a few percent, as the plate. Thus, ink transfer at the respective nips takes place primarily due to the averaging process that results when the two films of ink on the adjoining rollers are joined and then split apart, as they pass through the nip. Although film splitting is not a simple process, as brought out by the many detailed investigations of it

that have made, it will be sufficiently accurate for the purposes of this book to assume a 50/50 split. That is, the ink film thicknesses on the rollers at the nip exit are assumed to be the same and thus equal to the average of the sum of the film thicknesses on the rollers prior to entering the nip. Using this model, and the above final film thickness, the ink film thicknesses can be calculated throughout the roller train, assuming 100 percent coverage of the plate.

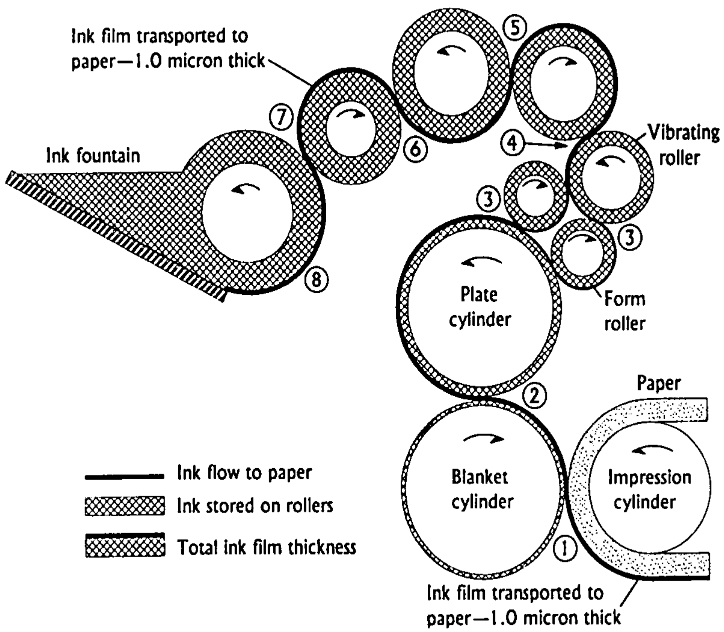

Figure 1.5 Roller diagram of an idealized inking system with ink film thicknesses shown to scale. Circled numbers indicate total film thickness in microns at given location.

This has been done for an idealized inking system design similar to a design proposed over 85 years ago (Wood, 1918). This system, along with the calculated film thicknesses, is shown in Figure 1.5. This shows that the ink film thickness on the vibrator above the form rollers is 3 to 4 microns, which compares reasonably well with the values of 4 to 6 microns that were measured at the end of a run of 1000 impressions on a sheetfed press (Adams, 1954) using radioactive tracer techniques.

Further study of Figure 1.5 reveals a number of other interesting facts as follows:

1. The ink film thickness carried by the plate is 2 to 3 microns.
2. The total ink film thickness on a roller (other than a form roller) is some multiple of the thickness of the ink film being transported times one plus the number of nips it is removed from the plate.

3. The gradient in ink film thickness that develops down the roller train only exists while ink is being transported. Thus, if the roller train is disconnected from both the fountain and the plate (the normal action when not printing), the ink remaining on the rollers will be redistributed so that each roller will have the same ink film thickness. For the example shown in Figure 1.5, this average film thickness would be 4 to 6 microns. This point is significant in that when printing is resumed, the ink film on the form rollers will be somewhat thicker than required and desired. Thus an excessive amount of ink will be transferred initially, causing the first few sheets off the press to have higher print densities.
4. To meter out the desired amount of ink, the gap or opening between the ink fountain roller and blade must be 8 microns (0.00032 inch)—clearly impractical in a real system, for reasons that are explained in Chapter 4.

Although the idealized design shown in Figure 1.5 is useful in understanding how an inking system works, practical inker designs differ considerably. These differences, listed as follows, are elaborated on in subsequent chapters:

1. Additional form rollers are employed to minimize ghosting. Ghosting is defined as abrupt variations in print density on the sheet caused by the uneven films of ink that are left on the form rollers by the difference in ink transfer to image and nonimage areas of the plate.
2. Some, if not all, of the hard-surface rollers are provided with a lateral vibratory or oscillatory motion to randomize rib formation and to reduce ghosting.
3. The number of rollers used is much larger—as in Figure 1.2.
4. The ink fountain roller speed is reduced so as to permit the use of a wider metering gap between the fountain blade and roller.
5. A ductor roller, as shown in Figure 1.2, is used to intermittently transport ink from the slow-moving fountain roller to the higher-speed ink train. This results in an uneven rate of ink feed and is another reason why a larger number of rollers is used in practice.
6. On sheetfed presses, the plate cylinder surface is interrupted by a gap in the circumference that can be as long as 30 percent of the cylinder circumference. This gap presents an additional obstacle to providing an even ink feed rate. Corresponding gaps exist in the blanket and impression cylinders.

1.1.3 Dampening System. As already pointed out, the primary function of the dampening system is to supply and maintain a thin film of aqueous fountain solution (or water as it is often called) on the nonimage areas of the plate. The thickness of this film is significant, not only to the design of the dampening system, but also to an understanding of the